What's not to like about RCTs in education?

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Introduction

It is a sad truth that I am a sympathiser of Pavlov's dogs (1927). Whenever I hear mention of phrases such as 'evidence-based' policy and practice, 'what works' and RCTs (Randomised Control Trials) in education, my instant response is to dig up those foundational tenets of methodology: ontology and epistemology. This chapter, then, is a kind of archaeological dig; an excavation of the preceding chapters and of the research community's understandings of what we know about research and the ways in which we know it. It is an attempt at reflection and, I hope, provocation. It is a personal narrative and, I hope, with experiences and understandings that resonate with the research dispositions of others. So let me begin.

My first real struggle with questions of ontology and epistemology in research was as a postgraduate student in a methodology class, reading the likes of Karl Popper and Thomas Kuhn and being re-introduced to 'the nature of reality … different kind[s] of knowledge … [and] different set[s] of standards for evaluating knowledge claims' (Schwandt 1989: 379). It was there that I first encountered Habermas, the Frankfurt School and critical social science, being taken in by its political commitments and dialectic method.[1] It was there too that I first came across turtles as the basis for an alternative worldview, at the start of one of my compulsory readings and which has stayed with me ever since:

> There is a story about an Englishman who was told by his Indian friend that the world rested on a platform which rested on the back of an elephant which in turn rested on the back of a turtle. The Englishman asked his friend, "And what does the turtle rest on?" "Another turtle," came the reply. "And that turtle?" asked the Englishman. "Ah, Sahib," said the friend, "after that it is turtles all the way down." (Schwandt, 1989: 379)

I admit to thinking at the time, what a strange thing to include in an article on research methodology. It didn't help that Schwandt didn't return to explain what he meant by his oblique reference to the Hindu mythological/cosmological concept of infinite regression, other than by way of introduction to 'getting to the bottom' of different approaches to research. To me it seemed devoid of scientific rigour, even of common sense, and not the sort of thing that education research was meant to be about. It also felt condescending – despite the claim to friendship – representing the colonised other as infantile. But what struck me most was what I perceived as the juxtaposition of narrative and research. In my mind narrative was reserved for fiction, humour and the everyday. Research was supposed to be far more serious, more precise, more analytical in explaining the world, particularly in relation to things like what and how to teach, and how to know the extent to which these make any difference.

I later came to understand narrative as a distinct way of knowing and of representing knowledge. As a teacher educator I saw its value in helping my predominantly white middle class young female students move beyond deficit accounts of disadvantaged young people and their communities. Narrative was the vehicle I used in *Rough Justice* (Gale 2005) written with this audience in mind: to confess and share my own middle class ignorance and insensitivities, hoping that this would encourage my readers to do similarly; to explore how the 'helping' professions and their social institutions position people living in poverty; and to create a space for young people living on the streets to speak for themselves about how they understood their lives and their decisions. My ambition was for these personal stories to enable my audience to grasp the reality of the lived experiences of differently positioned others – which, in their inexperience and affluence, they had a habit of misrecognising and/or denigrating – revealing their lives in a way that quantitative social science seemed unable to do. My hope was that my students would identify with the

[1] As Leo Bartlett, my lecturer, said to me at the time, 'the person you are is the researcher you are.' Leo later appointed me to my first academic post and I have since learned that 'the person you are, is the academic you are.' There is a reality worth acknowledging here: although we are similar, more so to some than to others, we are not all the same and what a jolly good thing that is.

narrative's personal qualities. In my reckoning, narrative afforded them access to a certain reality, an ontology, which a traditional scientific method did not, could not. It allowed them to know things previously excluded from their frames of reference.

My ears were pricked again by narrative when widening participation policies were re-introduced into Australian higher education in 2008.[2] In the new policy regime universities were required to ensure that, by 2020, 20 per cent of their student population would be from a low socioeconomic background. Narrative became a useful vehicle to research and capture the lived experiences of young people from particular social groups who were marginalised and excluded from higher education. Interestingly, many vice-chancellors then felt compelled to share their own personal stories of socioeconomic disadvantage and hardship as a way of demonstrating their empathy with these accounts and to parade their own social justice credentials. Their shift in narrative from elitism to meritocracy is akin to the respective critiques provided by Piketty (2014) and Dorling (2010) (see Gale, Molla & Parker 2017); the narratives of vice-chancellors are now more meritocratic with often quite explicit messages of 'if I can do it [access university] so can you,' 'we want the brightest and best, wherever they can be found' and so on, without any apparent regard for knowledge as a form of cultural capital (Bourdieu 1986) – the inheritance of the dominant – or for different, changed and changing circumstances.

Narrative is not the preserve of the marginalised. It is also the stuff of education politics and policy making[3] but it tends to be on the periphery in the realm of knowledge and knowledge production (Connell 2007). It is often associated with indigenous peoples in the global south (Kunnie & Goduka 2006) and, like my initial reading of turtles as an explanation for everything, is regarded as somewhat simplistic as a research methodology. And yet there are some quite sophisticated accounts of doing indigenous research (e.g. Martin & Mirraboopa 2003) with quite clear and robust ontological and epistemological positions. For example, most Indigenous Australian researchers subscribe to a relational ontology, not unlike Actor Network Theory (ANT), in which the nature of reality is named as 'Country … the waters, the earth, the air we breathe, the flora, the fauna; it is everything connected to and in our environment' (Blair 2015: 194). The way to know this reality is through 'stories of relatedness' (Martin 2008: 84).

I have taken a leaf out of Schwandt's 'book' in introducing this chapter in a collection about Randomised Control Trials (RCTs) in education, by beginning with narrative; that is, starting from a position that is about as far removed from RCTs as one might imagine – as far as turtles are from models of inquiry – and yet the issues for narrative research and RCTs are not antithetical, as I hope will become apparent. As introductions go, it is also rather long although my intention is also for it to provide some disjuncture from other chapters, a kind of pedagogy of discomfort (Boler & Zembylas 2003; Zembylas 2008). So[4] I have deliberately written in the first person and deliberately tried to engage research personalities – by which I mean that research is a subjective exercise on the part of researchers and needs to be recognised and named as such[5] – because it seems to me that RCTs seek to maintain an objectivity, a claim to a non-political or non-ideological stance, which is beyond their grasp and this needs to be drawn out into the open.

The chapter is arranged in three parts: the privileging of the physical world as the dominant reality; the privileging of causal relations in epistemic claims; and the privileging and ethics of RCTs as the gold standard for educational research. I use these themes to review the Closing the Gap (CtG) project as reported in this collection. A lot more could be said about this research and its record discussed in the preceding chapters but I am conscious of the space available to me and also that others have a similar brief and hopefully they will do justice to the parts that I cannot address or do not address very well. All of this is against the backdrop of how researchers in the CtG project approach the question of what can be done to improve the academic achievement of students in schools, particularly those who face educational

[2] For a history of widening participation policies in Australian higher education, see Gale and Tranter (2011).
[3] For example, see Gale & Cross (2007) on 'the politics of (re)learning how and what to teach in Australia'.
[4] In other circumstances I would have used 'thus' instead of 'so' but I want to draw attention to how easily we move from one thing to another and, through the judicious use of language, disguise the move as logical, even scientific, in order to hide any tenuous aspects of our conclusions. I confess to doing this myself but I have used 'we' here to signal that I am not alone! The significance of moving 'from one to another' will become more apparent further on.
[5] See Bourdieu & Wacquant (1992) on reflexive objectivity.

disadvantages and do not perform very well on standardised tests, and particularly whether a specific 'intervention' can effect a positive change. In the background too is the proposition that research in schools is the part of the answer, including the possibility of teachers as researchers and of building capacity within schools to produce 'the evidence'. As part of this, I am particularly taken by Steve Higgins' (Chapter 5, this volume) claim that 'casual warrant' methodologies, like RCTs, are 'necessary but not sufficient in educational research', because I think this speaks directly to issues of ontology and epistemology, which I hope to address.

My virus has a mind of its own – on the ontological question of necessity

As a first move in that direction, then, it is important to understand that RCTs do not regard the physical and the social as different worlds. From a RCT perspective, they are one and the same reality.[6] More accurately, the social world is assumed to have no distinguishing features that would warrant demarcating it from the physical or the 'natural' world (Taylor 1985).[7] In this sense, the natural world is more than just the physical things of nature. There is a claimed common sense – a naturalness – about its reality that is hegemonic (Gramsci 1971).[8] This is different from the ontology of 'Country'[9] and even Actor Network Theory (ANT), which stress a relatedness between animate and inanimate objects; indeed they question whether objects can be inanimate, since they are dripping with meaning.

Instead RCTs are informed by an ontology that universalises the reality of the physical across the social world. This is not a claim that is made explicit but it is so nonetheless because RCTs are deemed by their users to be equally applicable in physical and social worlds by the simple fact of their use in both. And it is not the case that RCTs are agnostic with respect to ontological propositions, thereby rendering their use valid in both social and physical realms.[10] Instead, they are derived from and favour a particular view of reality – which is 'out there' to be discovered (by particular methods of discovery) – of what things are and how they are related (e.g. Hammersley 2013). Like all methods of research, RCTs are imbued with beliefs about the nature of the research 'problem', how it can be researched, what will count as data and so on. They are methods for producing knowledge based on what is deemed to count as knowledge. They are designed to produce certain knowledge outcomes (e.g. related to 'interventions'), albeit there can be some variation in these outcomes.

It is important to understand then, that RCTs and related 'evidenced-based' approaches to research have been conceived within the field of medical science (e.g. Pirrie 2001). They were designed to research things like viruses (e.g. influenza, Ebola, etc.), randomly assigning a 'treatment' or an 'intervention' to a sample or experimental group and having a control group that does not receive the intervention. The effectiveness of the intervention is inferred by comparing the two groups to determine the 'counterfactual' condition.[11] It is not just the virus that is at stake here. It is the interaction of the virus with the body's physiology and the treatment. Also, being a randomised intervention, there is a claim that the results have more general applicability and a high degree of validity (Ainsworth et al. 2015). This works for things like viruses because they do not have a mind of their own but are of the same 'mind' (e.g. see Taylor 2002). They tend not to select people to infect based on some social marker that distinguishes some people from others. Any turtle

[6] It is as if the interpretive, cultural, linguistic and postmodern turns, the legitimation crisis and the crisis of representation have passed RCTs by (St Pierre 2004: 243).

[7] There is also a small 'p' political or pragmatic element to subsuming the social within the physical. Dewey (1899) took this route – albeit his strategy was more epistemological than ontological – in the creation of Laboratory Schools, as a way of gaining legitimacy for educational research in academic contexts (specifically in the University of Chicago), marshaling the methods and approaches of the physical sciences and applying them within educational psychology. That legacy continued with the establishment of national associations of education researchers so that educational research was defined largely as psychological research; educational research by association (Lingard & Gale 2010).

[8] See also Taylor on how the pervasiveness of this ontology is bound up with human agency (1985), modern individual identity (1989) and the collective social imaginary (2004).

[9] Or a 'country-view' a la 'worldview'

[10] Have you noticed how my register has slipped back towards a more scientific mode? Are you being more fully persuaded?

[11] See Slavin (2002) for a fuller definition of RCTs.

will do.[12] But while viruses have no regard for social distinctions (cf. Bourdieu 1984), people have a mind of their own (see Taylor 2002 on predictability, changing self-understandings, etc.), which means they can and do act in ways that are unexpected, although not always![13] A key ontological debate in sociology has hinged on this very interplay between structure and agency, and how these seemingly conflicting social realities can be reconciled (e.g. see Giddens (1984) on 'structuration'; Bourdieu (1990) on 'the habitus').

The language of the research reported in this collection, then, is ontologically telling. Students, teachers, schools were 'exposed to interventions … [they] receive treatment' (Chapter 2), with just a little bit of 'pollution' and 'contamination' of control groups by experimental groups (Chapter 3) – spillage. This medical discourse and approach is adopted unproblematically it would seem, given the express desire for 'learning lessons from medicine and health care' … [and for interventions that are] modelled on medicine and the health sciences' (Chapter 6). The rationale for rolling out RCTs in schools would appear to be for Teaching Schools 'to parallel the role of Teaching Hospitals' (Chapter 6). Presumably, then, students' learning difficulties are akin to viruses (and other forms of disease and illness). Indeed, the model of inquiry is premised on students having a problem or 'symptoms' that require treatment, facilitated by assessments that demonstrate students' absence or diminished forms of cultural capital.[14] These students are pathologised first by naming their problem (often expressed in terms that match the solutions at hand)[15] and then by being treated with an intervention by some external agency or person (i.e. the types of interventions in the CtG project). All being well, they should recover.[16] Any change – it is after all an experiment – is deemed to be the effect of the intervention because that is the only thing seen to be different from the control group; the logic of which represents a leap of faith of elephant proportions. Thus, students are regarded as not having a mind of their own. When they are exposed to the same circumstances they are presumed to respond in the same ways.

That is the RCT reality. No account is taken in the research design of other influences on student learning (Berliner 2014) beyond discounting these through the use of control groups. No account is taken of the circumstances of those doing the intervening: teachers 'exposed to loads of different CPD, loads of different agenda, loads of different information coming at them' (Chapter 2). Except when RCT advocates realise that people are different from each other and so they engage in fancy statistical footwork to 'reduce between-participant variation' (Chapter 2). And except when teachers who engage in RCTs realise that context makes a difference to how interventions work (or do not work) and so they make decisions about '"what works" in their own contexts' (Chapter 1) and then 'adapted interventions to suit' (Chapter 2). In fact, more often than not 'the importance of context is often ignored and can lead to the simplistic adoption of a "what works" approach to policy making' (Chapter 3). But even when acknowledged, there is a danger for context to be regarded as just another variable to factor in, to control for, understood as a difference in circumstances rather than as a social and cultural space in which ways of being, doing and understanding vary. In an RCT worldview, context is not the equivalent of what Bourdieu would call 'field' (social sites of positions and stance, of manoeuvre and struggle). Rather, context matters to the extent that: 'If you take the student out of one set of circumstances and put him/her in another set of circumstances, s/he will flourish. A few days in the sun will do you good.'

But 'being a student is quite different from that of being a patient – being a student is not an illness, just as teaching is not a cure' (Biesta 2007: 8). In order to adequately research teaching and learning, we need research methodologies that first recognise:

[12] The fact that some research reported in this volume employed a modified form of randomization (e.g. Chapter 2) could be seen as evidence that researchers themselves do not believe that any turtle will do and thus RCTs are ontologically inadequate when employed in the field of Education.

[13] There is a classic exchange in the film *The Life of Brian* when Brian admonishes the crowd for its crowd mentality in mindlessly following him: 'You've got to think for yourselves. You're all individuals. You're all different', he proclaims from on high, to which a sole unidentifiable voice in the crowd replies, 'I'm not'.

[14] This is one reason why you rarely see interventions in elite schools; another concerns the politics of doing so, although they are related.

[15] Policy makers are also adept at naming problems that match the solutions at hand. See Gale (1994) on 'story-telling and policy making.'

[16] Or not, as Chapter 2 notes, 'the majority of the interventions [in the CtG project] showed no effect greater than existing good practice.'

> … how humans understand themselves and their world is an essential or primary property of their existence, not one that can be bracketed out in the quest to explain them. Secondly, because humans' self-interpretations influence their actions and behaviour, any account that excludes this variable cannot be adequate. (Abbey 2000: 154; sec. Taylor 1985)

And if RCTs in education are not ontologically adequate, then they are probably not necessary.

Just a little bit pregnant – on the epistemological question of sufficiency

Because RCTs see no difference between physical and social worlds or regard the social world as operating in the same way as the physical world, they tend to search for the same kinds of knowledge they imagine to exist in the physical world. In fact, with ontological matters held constant, research is reduced to matters of epistemology. I am being a bit sloppy here in personifying RCTs as if they can be attributed with human characteristics, which they cannot. Of course I mean those who employ RCTs, which have been designed with this purpose in mind. But my sloppiness is illustrative of the ways in which RCTs also operate, in reverse, to strip personal characteristics from research subjects (Taylor 1985) – they are not to be known for their differences beyond their membership of one of two groups, and perhaps a little bit about their contexts (i.e. circumstances, often socioeconomic). As I mention above, RCTs provide a method for producing knowledge based on a particular view of what counts as knowledge. Specifically, their experimentation is designed to produce knowledge about cause and effect relations, nothing personal. That is, 'if we know this, then we know that,' 'if we introduce this intervention, it will change things in a particular way.' There is an assumed unambiguous and linear relationship between the first and the second, from the first to the second. Pavlov's (1927) theories of stimulus and response provide a good example.[17] Another example: in education and governments around the world, there is now an imagined and clear line of sight from what teachers do and what students learn, which means we can hold teachers accountable for the poor academic achievement of students and, in turn, hold teacher educators to account for the poor teaching of teachers (Gale & Parker 2017). It is a 'representational epistemology' (Biesta 2010), presenting the world as a series of cause-effect relations that mirror reality (Rorty 1978).

There is a very appealing aspect to having such knowledge: the ability to predict what will happen on the basis of what we know now and/or what we have seen happen before. The trouble is, the evidence indicates that the randomised control trial in education 'falls short of its own claims to be controlled, exact and unambiguous' (Thomas 2014: 12; sec. Parlett & Hamilton 1987), so that it 'does not enable the establishment of causal connections' (Thomas 2014: 11; sec. Goldstein 2002). This is similar to what CtG researchers also found. Even though there was a desire to implement 'evidence informed practice using designs with strong causal inference' and a 'trials methodology' focus on 'stronger causal evidence' (Chapter 4), 'the majority of the interventions showed no effect greater than existing good practice' (Chapter 2). And yet several CtG project teachers saw benefit for some students in continuing with the interventions despite the official overall position that they did not have much effect (Chapter 1). They exercised their professional judgment!

Some blame teachers' 'personal theories' or bias – seen as the product of their inculcation into the teaching profession and an over-reliance on what has previously passed as educational research – for the poor showing of RCTs in the CtG project, because these teachers allowed their 'existing [preconceived] understandings of cause and effect in the classroom' to influence the research design (Chapter 5).[18] Of course, bias is not just the preserve of teachers. It is integral to what it means to be a researcher and thus to their methods, which – to reiterate – are designed to generate specific kinds of knowledge; they are inherently and *deliberately* biased. They take a position on an issue: that it is worth researching, that something should be done (e.g. closing the gap). They are not and cannot be neutral and objective. How we confront the influence of researchers on research outcomes, then, turns on the different approaches and assumptions of the natural and social sciences. RCT researchers seek to deal with bias by removing the

[17] I want it noted that my sympathies are with Pavlov's dogs (see my opening sentence) not with the applicability of his theories in the field of education.

[18] I will come to the exclusivity of this stance in the next section.

effect of the researcher 'through systematic data collection and analysis' and other (unspecified) control mechanisms (Chapter 5). But as social researchers we can build into our research a 'reflexive objectivity' (Bourdieu & Wacquant 1992) to enable us to name and better understand our involvement in privileging particular research aims and objectives and forms of evidence, interpretation and knowledge. As teacher educators, we can foreground reflexive objectivity with teachers too, to encourage the formation of *deliberative* not just 'deliberate' professionals (Gale & Molla 2017).

At their best, RCTs 'provide a *retrospective* assessment of whether the policy, intervention or approach was actually responsible for any changes in outcomes for learners' (Chapter 5, emphasis added). From this perspective, these assessments add to the evidence base, which is then used by RCT researchers to predict outcomes in the future. And yet there is no evidence that such prediction is valid. Just because it happened once does not mean it will happen again or in the same way, especially in the social world. As Biesta (drawing on Dewey's practical epistemology) observes, research 'can tell us what worked but cannot tell us what works … [in fact] we cannot and should not expect that situations will stay the same over time, and we should definitely not expect this in the social realm' (2007: 15-16). This is because social systems are recursive and non-deterministic, in contrast to the closed systems assumed in the natural sciences (Biesta 2010). Thus, 'prediction … cannot be a goal of social science as it is of natural science' (Taylor 1985: 48).

Even when there is evidence of change, without this predictability, without being able to establish a strong causal link to interventions, the warrant for RCTs in education has the appearance of being just a little bit pregnant.[19] In fact, you can be pregnant or not pregnant but never somewhere in between. Providing evidence *of* change but not evidence *for* change is a half-baked RCT outcome. And it makes claims like the following ring a little hollow:

> 'Scientific' knowledge about cause and effect in education are essential tools for the professional educator. Not to be open to the evidence from research with strong causal warrant is problematic as it implies professionals are limited to opinion and judgement, with only limited knowledge about the effectiveness of what they do in relation to specific ends (e.g. reading or proficiency in mathematics). (Higgins, Chapter 5)

Given such provocation, I have to ask what knowledge teachers in the CtG project were able to glean from their research, apart from the realisation that they were not able to 'scientifically' discern whether their interventions had any significant effect. That is, teachers can engage in RCTs with no discernible benefit, although to be fair, not being able to show an effect is still an outcome worth knowing – as several chapter authors acknowledge. But the lack of a determinable effect of an intervention does not bode well for governments aiming to amass evidence for 'what works' and on which to base policy and practice. And I would also point out that in the absence of RCTs, teachers' knowledge and judgments are not necessarily limited to opinion. Professional learning opportunities aside (see Doecke et al. 2008), there is a long history of teacher involvement in research (Chapter 7) and of other educational research that has had significant effects (e.g. see DETYA 2000, an Australian Government report bulging with evidence of the impact of educational research), although not all of it 'scientific' in the limited sense of that term used above. The choice for professional educators is not RCTs or nothing. In terms of not being 'sufficient' (Chapter 5), RCTs in education are certainty that.

Doing a Bradbury – on the ethical questions of distinction and exclusion

This then raises the issue of the distinction (the privileged status; cf. Bourdieu 1984) that RCTs have been afforded by governments as the new gold standard for educational research (Goldstein 2002; St Pierre 2006; Holmes et al. 2006), to the point that in some quarters it has become synonymous with educational research itself; the consequence of a 'regime of truth' (Foucault 1980) that operates to ensure that one account of education research is positioned as the only account.[20] In this reckoning, if education does not

[19] Lou Mannheim in the movie *Wall Street*: 'You can't be just a little bit pregnant when you are talking bankruptcy. You can't be just a little bit bankrupt. You are either bankrupt or not bankrupt'

[20] See my earlier footnote about the preeminence of psychology in establishing educational research as a legitimate academic endeavour.

engage with research with a strong casual warrant, all you have left is opinion. Then there is only one contestant left on the podium – gold it is! Australians would call this, 'doing a Bradbury'.[21]

This privileging of RCTs in education (and in other social fields) is a phenomenon particular to post-industrial nations, at a time of:

> … governments increasingly attempting to set research agendas and research priorities with implications for valorised methodologies and theories, either implicit or explicit within these political agendas. For example … the Bush government in the USA attempted to construct 'empirically randomised control trials' as the 'gold standard' for assessing educational research and for evaluating all research applications … The situation in the UK has been similar. (Lingard & Gale 2010: 33)

The reasons for doing so are (1) ostensibly 'grounded in political and professional concerns about underachievement and educational equity' (Chapter 8) and (2) for purposes of efficiency and effectiveness, so that 'time and money were not wasted on irrelevant or ineffective strategies' (Chapter 8); (3) both pursued in the belief that much education research is unscientific and based in values, opinion and 'bias' that have a disregard for evidence (Hammersley 2005; Ainsworth et al. 2015; Pring 2015). In fact, advocates of RCTs at government level have called for their use in educational research *precisely* because they are presumed to yield knowledge superior and more reliable than other methods (e.g. see Chapter 3; Goldacre 2013; Hammersley 2005). Hence, the UK Government's advocate for RCTs in education – Ben Goldacre, a medical doctor, broadcaster and academic – predicts:

> … a huge prize waiting to be claimed by teachers. By collecting better evidence of what works best, and establishing a culture where this evidence is used as a matter of routine, we can improve outcomes for children, and increase professional independence. (Goldacre, 2013:7).

I have already noted that RCT claims to its elevated importance and usefulness in education are dubious, certainly as evidenced in the CtG project, but so are claimed increases to teacher independence. On this Higgins (Chapter 5) assures us that the:

> … involve[ment of] schools and teachers in selecting the focus for experimental inquiry and in managing and conducting the process of the trials themselves … is sufficient to counter Biesta's (2007) claim that 'scientific' approaches *necessarily* create a democratic deficit in educational research.

But this misses Biesta's (2007) point that the problem with RCTs in education is not so much with teacher participation in RCTs – both in determining their focus and in conducting the research – but with teachers' exclusion from theorising the nature of education, even before decisions are made about how knowledge about this reality can be generated. The democratic deficit in RCTs, which Biesta identifies, is in relation to ontology not epistemology, more specifically in the privileging of epistemology over ontology. It is a fault of generalising the reality of the physical world over the social world noted above. It is: 'The great vice of the tradition [of scientific knowledge] … that it allows epistemology to command ontology' (Taylor 1990: 264); RCTs are used irrespective of the nature of the reality being researched, whereas 'questions of correct method are contingent upon the object under study; they cannot be determined in advance' (Abbey 2000: 189). As Biesta concludes:

> This is why the 'what works' agenda of evidence-based practice is at least insufficient and probably misplaced in the case of education, because judgment in education is not simply about what is possible (a factual judgment) but about what is educationally desirable (a value judgment). (Biesta 2007: 10)

Judgments of fact are matters for epistemology; judgements of value are matters for ontology.

[21] At the 2002 winter Olympics, Steven Bradbury won gold for Australia in a short course speed ice skating event, after being a distant last until the final corner, 10 metres from the finish line, when all six of his more fancied opponents ahead of him fell, allowing Bradbury to skate past and claim gold.

The gold standard of RCTs in education is further tarnished when we consider the paradox of going to all this trouble to little effect or – if RCT treatments are believed to deliver improvements for students – of restricting access to treatments to some (the experimental group) and not to others (the control group). How do these things get through ethics committees (see Chapter 8 in particular)? In fact, if such research was proposed in Australia and the students were Indigenous, it probably never would (see AIATSIS 2012 for the Guidelines of Ethical Research in Australian Indigenous Studies). Which brings me to the more substantive ethical issue of 'epistemological equity' (Dei 2010). The political advocacy of RCTs as the gold standard in educational research and the related posturing of RCT researchers to claim top position on the dais, are also about the rejection of other ways of knowing the social world. But their rejection is not just of other ways of knowing. By 'rejecting another epistemology … we are also rejecting the people who live that epistemology' (St Pierre 2006: 257).

Conclusion

As a sociologist of education I imagine the social world in terms C. Wright Mills (1959) refers to as relations between 'private troubles' and 'public issues' – or perhaps I am a sociologist because I imagine the social world in these ways (see footnote 1). Other sociologists are inclined to name these relations as micro and macro, and even meso (i.e. just a little bit pregnant!). I am less inclined to use such nomenclature because it tends to emphasise structure over agency and also because it separates out from each other the social realities it attempts to name. For Mills, private troubles and public issues are different readings of the same social reality, they are embedded in each other. Thus, for me, important questions are why RCTs in education have become so prominent, to the extent that they have captured the research and policy imaginations of governments? How are the public issues and private troubles of student achievement related? Or how does the social reality speak of both?

I think answers lie in the current economic crisis of post-industrial nations, in which industrial dominance has slipped from the grasp of 'western' nations and a global knowledge economy in which they might be preeminent, presents as a tantalising solution (Brown et al. 2011), the only solution. 'If we can no longer produce the goods, we need to live by our wits.' Smart schools, smart cities, smart states. Education has become a central mechanism for governments to achieve its ends, not unlike the introduction of compulsory schooling at the start of the industrial revolution (Williams 1961).[22] Now progress towards this end is measured through PISA results and other standardised tests, which allow governments to compare and chart and scheme and worry, and bring back traditional ways of doing education – like grammar schools and apprenticeship models for preparing teachers – which must have worked because 'we got to where we are doing it that way, didn't we?' Today's UK politicians fall into the same n=1 trap as Australian vice-chancellors (see above); that is, 'it worked for me, it will work for others.'

This account of public issues also provides explanation for how it is that on one particular day there are far too many students from disadvantaged backgrounds who do not aspire to higher education, when the day before their aspirations were not even contemplated. In Australia, that was the day the government re-introduced widening participation policies to increase student enrolments – not in the face of pent up demand, as in previous expansion periods, but because the supply of graduates was not sufficient to build a knowledge economy (Gale & Tranter 2011). On relations of private troubles and public issues:

> I could equally write about my own troubles on finishing school, of facing the prospect of missing out on accessing HE given my average academic results and all but non-existent financial resources. Yet these troubles were reframed by an incoming Whitlam Government's restructuring of 1970s Australian HE, including the creation of more university places thereby redefining minimum entry requirements – the removal of tuition fees and the introduction of a means-tested allowance. Had I graduated from school the year before, I would have been 'out in the cold'. Instead, HE access was transformed just at the moment I sought entry. As Mills explains, 'the sociological imagination enables us to grasp history and biography and the relations between the two within society' (1959: 6). (Gale 2015: 259)

[22] The most recent agenda to expand higher education participation is like no previous expansion phase. The closest parallel is with the introduction of compulsory schooling (Gale 2015).

In this context of precarious global ambitions, RCTs offer governments and schools the prospect of more precise instruments to engineer their populations into forms of human capital, which will enable them to claim a controlling stake in a knowledge economy and thus retain disproportionate positions of global power. Quite apart from the political and theoretical problems associated with a knowledge economy (Brown et al. 2011) and human capital (Feher 2009), RCTs can never deliver on this precision because they operate on a false premise: that the social world is the same as the physical world. But it isn't and we must continue to point out the difference not just as a point of order, of ontology, but also as a matter of equity, of epistemology, for those who are the subject of others' interventions.

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References

Abbey, R. (2000). *Charles Taylor*. Teddington, UK: Acumen Publishing.

Ainsworth, H., Hewitt, C. E., Higgins, S., Wiggins, A., Torgerson, D. J., & Torgerson, C. J. (2015). Sources of bias in outcome assessment in randomised controlled trials: a case study. *Educational Research and Evaluation, 21*(1), 3-14.

Australian Institute of Aboriginal and Torres Strait Islander Studies 2012 [AIATSIS] (2012). *Guidelines for Ethical Research in Australian Indigenous Studies.* Canberra: AIATSIS. Available at: http://aiatsis.gov.au/sites/default/files/docs/research-and-guides/ethics/gerais.pdf Accessed 12 March 2017.

Berliner, D. C. (2014). Exogenous Variables and Value-Added Assessments: A Fatal Flaw. *Teachers College Record, 116*(1), 1-31.

Biesta, G. (2007). Why "what works" won't work: evidence-based practice and the democratic deficit in educational research. *Educational Theory, 57*(1), 1-22.

Biesta, G. J. J. (2010). Why "What Works" Still Won't Work: From Evidence-Based Education to Value-Based Education. *Studies in Philosophy and Education, 29*(5), 491-503.

Blair, N. (2015) Aboriginal education: More than adding different perspectives. In N. Weatherby-Fell (Ed.), *Learning to teach in the secondary school* (pp. 189-208). Port Melbourne, Victoria: Cambridge University Press.

Boler, M., & Zembylas, M. (2003). Discomforting Truths: The Emotional Terrain of Understanding Difference. In P. P. Trifonas (Ed.), *Pedagogies of Difference: Rethinking Education for Social Change* (pp. 107-130). London: Routledge Falmer.

Bourdieu, P. (1984). *Distinction: A Social Critique of the Judgement of Taste* (R. Nice, Trans.). London: Routledge & Kegan Paul.

Bourdieu, P. (1986). The Forms of Capital. In J. G. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp. 241-258). Westport, Connecticut: Greenwood Press.

Bourdieu, P. (1990). *The Logic of Practice* (R. Nice, Trans.). Cambridge: Polity Press.

Bourdieu, P., & Wacquant, L. J. D. (1992). *An Invitation to Reflexive Sociology*. Cambridge: Polity Press.

Brown, P., Lauder, H., & Ashton, D. (2011). *The Global Auction: The Broken Promises of Education, Jobs, and Incomes*. Oxford: Oxford University Press.

Connell, R. W. (2007). *Southern Theory: the global dynamics of knowledge in social science*. Crows Nest, N.S.W: Allen & Unwin.

Dei, G. J. S. (2010). *Teaching Africa: Towards a Transgressive Pedagogy*. Dordrecht: Springer.

Department of Education, Training & Youth Affairs [DETYA] (2000). *The Impact of Educational Research*. Canberra: Commonwealth of Australia. Available at: http://www.voced.edu.au/content/ngv%3A33846. Accessed 13 March 2017.

Doecke, B., Parr, G., North, S., Gale, T., Long, M., Mitchell, J., Rennie, J., & Williams, J. (2009). *National Mapping of Teacher Professional Learning 2008 Report*. Canberra: Commonwealth Department of Education, Employment and Workplace Relations (DEEWR).

Dorling, D. (2010). *Injustice: Why social inequalities persist*. Bristol: The Policy Press.Foucault, M. (1980). *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977* (C. Gordon, L. Marshall, J. Mepham, & K. Soper, Trans. C. Gordon Ed.). New York: Pantheon Books.

Feher, M. (2009). Self-Appreciation; or, The Aspirations of Human Capital. *Public Culture*, *21*(1), 21–41.

Gale, T. (1994). Story-telling and policy making: the construction of university entrance problems in Australia. *Journal of Education Policy, 9*(3), 227-232.

Gale, T. (2005). *Rough Justice*: *Young people in the shadows.* New York, NY : Peter Lang Publishing.

Gale, T. (2015). Widening and expanding participation in Australian higher education: In the absence of sociological imagination. *The Australian Educational Researcher, 42*(2), 257-271.

Gale, T., & Cross, R. (2007). Nebulous Gobbledegook: The Politics of Influence on How and What to Teach in Australian Schools. In A. Berry, A. Clemans, & A. Kostogriz (Eds.), *Dimensions of Professional Learning: Professionalism, Practice and Identity* (pp. 5-21). Rotterdam: Sense.

Gale, T., & Molla, T. (2017). Deliberations on the deliberate professional: Thought-action provocations. In J. Lynch, J. Rowlands, T. Gale, & A. Skourdoumbis (Eds.), *Practice Theory: Diffractive readings in professional practice and education* (pp. 247-262). Abingdon: Routledge.

Gale, T., Molla, T. & Parker, S. (2017). The Illusion of Meritocracy and the Audacity of Elitism: Expanding the Evaluative Space in Education. In S. Parker, K. Gulson & T. Gale (Eds.), *Policy and Inequality in Education* (pp. 7-21). Singapore: Springer.

Gale, T. & Parker, S. (2017, forthcoming). The prevailing logic of teacher education: privileging the practical in Australia, England and Scotland. In M. Peters, B. Cowie & I. Menter (Eds.), *A Companion to Research in Teacher Education*. Springer.

Gale, T., & Tranter, D. (2011). Social justice in Australian higher education policy: an historical and conceptual account of student participation. *Critical Studies in Education, 52*(1), 29-46.

Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge: Polity Press.

Goldacre, B. (2013). *Building Evidence into Education*. Available at http://media.education.gov.uk/assets/files/pdf/b/ben%20goldacre%20paper.pdf Accessed 7 March 2017.

Goldstein, H. (2002) *Designing social research for the 21st Century*. Inaugural professorial address, University of Bristol, 14 October.

Gramsci, A. (1971). *Selections from the Prison Notebooks* (Q. Hoare & G. N. Smith, Trans.). New York: International Publishers.

Hammersley, M. (2005). The Myth of Research-based Practice: The Critical Case of Educational Inquiry. *International Journal of Social Research Methodology, 8*(4), 317-330.

Hammersley, M. (2013). *The myth of research-based policy and practice*. London: Sage.

Kunnie, J., & Goduka, N. I. (Eds.). (2006). *Indigenous Peoples' Wisdom and Power: Affirming Our Knowledge Through Narratives*. Aldershot: Ashgate.

Lingard, B., & Gale, T. (2010). Defining Educational Research: A Perspective of/on Presidential Addresses and the Australian Association for Research in Education. *Australian Educational Researcher, 37*(1), 21-49.

Martin, K., & Mirraboopa, B. (2003). Ways of knowing, being and doing: A theoretical framework and methods for indigenous and indigenist re-search. *Journal of Australian Studies, 27*(76), 203-214.

Martin, K. (2008). *Please knock before you enter: Aboriginal regulation of Outsiders and the implications for researchers*. Tenneriffe, Brisbane: Postpressed.

Mills, C. W. (1959). *The sociological imagination*. Oxford: Oxford University Press.

Parlett, M., & Hamilton, D. (1987). Evaluation as illumination: a new approach to the study of innovatory programmes. In R. Murphy & H. Torrance (Eds.), *Evaluating Education: Issues and Methods* (pp. 57-73). London: PCP.

Pavlov, I. P. (1927). *Conditioned reflexes: an investigation of the physiological activity of the cerebral cortex*. London: Oxford University Press.

Piketty, T. (2014). *Capital in the Twenty-First Century* (Trans. A. Goldhammer). Cambridge, MA: The Belknap Press of Harvard University Press.

Pirrie, A. (2001). Evidence-based Practice in Education: The Best Medicine? *British Journal of Educational Studies, 49*(2), 124-136.

Pring, R. (2015). *Philosophy of Education Research* (3rd ed.). London: Bloomsbury.

Rorty, R. (1978). *Philosophy and the Mirror of Nature*. Oxford: Basil Blackwell.

St. Pierre, E. A. (2006). Scientifically Based Research in Education: Epistemology and Ethics. *Adult Education Quarterly, 56*(4), 239-266.

Schwandt, T. A. (1989). Solutions to the Paradigm Conflict: Coping with Uncertainty. *Journal of Contemporary Ethnography, 17*(4), 379-407.

Slavin, R. E. (2002). Evidence-based Education Policies: Transforming Educational Practice and Research. *Educational Researcher, 31*(7), 15-21.

Taylor, C. (1985). *Philosophy and the Human Sciences: Philosophical Papers 2*. Cambridge: Cambridge University Press.

Taylor, C. (1990). Rorty in the Epistemological Tradition. In A. Malachowski (Ed.), *Reading Rorty* (pp. 257-275). Oxford: Blackwell.

Taylor, C. (1989). *Sources of the Self: The Making of Modern Identity*. Cambridge: Cambridge University Press.

Taylor, C. (2002). Understanding the Other: A Gadamerian View on Conceptual Schemes. In J. Malpas, U. Arnswald, & J. Kertscher (Eds.), *Gadamer's Century: Essays in Honor of Hans-Georg Gadamer* (pp. 279-297). Cambridge, Mass.: MIT Press.

Taylor, C. (2004). *Modern Social Imaginaries*. Durham: Duke University Press.

Williams, R. (1961). *The Long Revolution*. London: Pelican.

Zembylas, M. (2008). Engaging With Issues of Cultural Diversity and Discrimination Through Critical Emotional Reflexivity in Online Learning. *Adult Education Quarterly, 59*(1), 61-82.